CLAIMS

1. A fuel cell stack (10) comprising a plurality of stacked unit cells (11), wherein each unit cell (11) comprises:

a membrane electrode assembly (1a) in which gas diffusion electrodes (1p) are disposed on each side of a polymer electrolyte membrane (1m); and

a separator (1b, 1c) comprising a plurality of ribs (5b) which contact the membrane electrode assembly (1a) to realize a current collecting function, and a plurality of gas passages (4b) formed between the ribs (5b) for supplying a gas to the gas diffusion electrode (1p),

the fuel cell stack (10) comprises a first region and a second region in the interior thereof, the first region having a higher temperature than the second region, and

at least one of the gas passages (4b), the ribs (5b), and the gas diffusion electrode (1p) is constituted such that a gas diffusion through the gas diffusion electrode (1p) adjacent to the first region is improved beyond the gas diffusion through the gas diffusion electrode (1p) adjacent to the second region.

2. The fuel cell stack (10) as defined in Claim 1, wherein the first region is a central region of a surface of the unit cell (11) when seen from a stacking direction of the fuel cell stack (10), and the second region is a region on an outer side of the first region on the surface of the same unit cell (11).

3. The fuel cell stack (10) as defined in Claim 1, further comprising a plurality of coolant passages (4c) through which a coolant flows onto a rear side of the gas passages (4b),

wherein the first region is a region near an outlet from the coolant passages (4c), and the second region is a region on the outer side of the first region.

4. The fuel cell stack (10) as defined in Claim 1, wherein the first region comprises unit cells disposed in the center of the plurality of stacked unit cells (11), and the second region comprises unit cells (11) disposed on the outer side of the unit cells (11) disposed in the center.

5. The fuel cell stack (10) as defined in any one of Claim 1 to Claim 4, wherein a sectional area of the gas passages (4b) adjacent to the first region is larger than the sectional area of the gas passages (4b) adjacent to the second region.

6. The fuel cell stack (10) as defined in Claim 5, wherein the sectional area of the gas passages (4b) adjacent to the first region increases toward a downstream side.

7. The fuel cell stack (10) as defined in any one of Claim 1 to Claim 6, wherein a width of the ribs (5b) adjacent to the first region is smaller than the width of the ribs (5b) adjacent to the second region.

8. The fuel cell stack (10) as defined in Claim 7, wherein the width of the ribs (5b) adjacent to the first region decreases toward the downstream side.

9. The fuel cell stack (10) as defined in any one of Claim 1 to 8, wherein a porosity of the gas diffusion electrode (1p) adjacent to the first region is greater than

the porosity of the gas diffusion electrode (1p) adjacent to the second region.

10. The fuel cell stack (10) as defined in Claim 9, wherein a mixture containing carbon is coated in a smaller amount onto the gas diffusion electrode (1p) adjacent to the first region than the gas diffusion electrode (1p) adjacent to the second region.